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<https://doi.org/10.1057/s41599-024-03008-2>

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The development, shortcomings and future improvement of punitive damages for environmental torts in China—a reflection and comparative research

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In the early 1990s, China introduced into its civil legal system the punitive damages system derived from the Anglo-American legal tradition, marking a significant legislative breakthrough among civil law countries. Currently, China is one of the countries with the greatest pressure to reduce emissions in the world, and more effective legal tools are needed for environmental governance. Therefore, in China's Civil Code, which came into effect in January 2021, punitive damages for environmental torts were established, enabling the imposition of additional compensation for severe environmental pollution and ecological damage incidents and thus enhancing the deterrent effect of environmental laws. The construction of punitive damages for environmental torts in China has significant positive implications, but the provisions of the system are not perfect, leading to some confusion in its judicial practice. The United States has a very systematic and mature experience in the construction of punitive damages for environmental torts, which is worthy of reference for China. From a comparative research perspective, China's punitive damages for environmental torts should particularly focus on issues such as expanding its scope of application, clarifying rules for determining compensation amounts, addressing issues of concurrent liability and optimizing related legislation.

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Introduction

An environmental crisis is a regional or even global phenomenon of environmental pollution and a decline in environmental functions caused by human life and production activities, which seriously affects and threatens the survival and development of human beings. Since 1972, when the United Nations convened the Conference on the Human Environment, it has become a world consensus that the environmental crisis is one of the greatest challenges facing mankind and that common but differentiated responsibilities have become the basic principle of the world environmental protection cause (Cullet, 2010). At the end of the 20th century, China was already experiencing a serious environmental crisis. However, due to the state of China's economic development and the backwardness of its environmental technology, there seemed to be a disproportionate relation between China's responsibility for environmental protection and the pollution it caused. In the 21st century, China's comprehensive national power has grown rapidly, and it is currently the world's second largest economy, while at the same time, China has long been the top greenhouse gas emitter in the world (Javed and Cudjoe, 2022). Against this backdrop, China must assume greater responsibility for environmental protection than ever before. (An and Sang, 2022).

Clearly recognizing its growing environmental responsibilities, China proposed a national strategy for building an ecological civilization in 2007 (Wang et al., 2014). Ecological civilization is an innovative concept introduced by China with the aim of shaping the development paradigm for a postindustrial era in human society. At its core, ecological civilization posits that economic development and environmental protection are not mutually exclusive. It advocates abandoning the previous development model of "economy first, environment later" and, instead, promoting a win-win situation for economic growth and environmental protection through the development of green technologies and industries (Zhuang, 2023). In the seventeen years since then, the strategic position of ecological civilization construction in China's development has been increasing. (An and Liu, 2023) At the time of 2018, the construction of ecological civilization was even included in its constitution (Hansen et al., 2018). In the revised preamble of the Chinese Constitution, there is a clear statement regarding the fundamental tasks of the nation, emphasizing the need to "promote the coordinated development of material civilization, political civilization, spiritual civilization, social civilization, and ecological civilization". Under this social context, China has implemented a series of energy management, energy conservation and emission reduction policies in recent years, including measures to establish a regulatory and statistical system for energy consumption, promote energy conservation technologies, and restrict highly polluting and energy-intensive industries to reduce energy consumption and pollution emissions (Liu et al., 2019). Moreover, the Chinese government has gradually increased its support and guidance for the environmental protection industry to achieve coordination between economic growth and environmental protection development by optimizing the industrial structure and developing environmental protection industries and a circular economy (Li et al., 2021).¹ Since 2010, China has, through the issuance of new environmental protection policies, environmental laws, and environmental standards, phased out tens of thousands of businesses that would cause severe environmental pollution, demonstrating its commitment to environmental protection.²

In 2021, China promulgated the first Civil Code in its modern history, incorporating the Green Principles (Szpotakowski, 2020). Article 9 of the Chinese Civil Code stipulates, "In their civil activities, civil subjects shall act in a way that benefits resource conservation and protects the ecological environment."

Incorporating the Green Principles into the Chinese Civil Code implies that the notion of environmental protection and resource conservation should permeate all civil activities (Zheng, 2022). Under the guidance of the Green Principles, the seventh chapter of the Chinese Civil Code's Tort Liability section, "Liability for Environmental Pollution and Ecological Damage", outlines a comprehensive system that embodies the Green Principles. Compared to the preexisting environmental tort liability system before the enactment of the Chinese Civil Code, the Green System in the Tort Liability section of the Chinese Civil Code innovates in three aspects: the scope, extent and methods of remedies. Specifically, it introduces ecological damage liability, establishes a punitive damage system for environmental torts and creates an ecological environmental damage compensation liability mechanism. Among these, the establishment of a punitive damage system for environmental torts, as outlined in Article 1232 of the Chinese Civil Code, has sparked significant attention and considerable debate. It states, "If the tortfeasor intentionally pollutes the environment or causes severe consequences by violating the law, the aggrieved party has the right to request corresponding punitive compensation (Xu and Khan, 2023)."

Punitive Damages for Environmental Torts breaks the originally strict functional boundaries between environmental tort liability and environmental administrative/criminal liability. For this reason, the system has sparked considerable controversy during its legislative establishment and has further led to disputes over its specific application rules after implementation. In the civil law system, the primary function of tort liability is to compensate for the damages resulting from a tortious act, while the punishment of the tortfeasor is typically achieved through administrative penalties or criminal sanctions by the state authorities. However, with the increasing prominence of environmental issues and a growing emphasis on ecological environmental protection in China, many scholars have argued for the introduction of the punitive environmental tort compensation system. Their main argument is that the punitive measures of China's environmental administrative and criminal liability are insufficient to effectively deter environmental pollution and ecological damage. Furthermore, the damages suffered by victims and the environment itself in environmental tort cases are often hidden and latent, making it challenging to comprehensively calculate the extent of actual harm. As a result, compensating for harm based solely on the actual damage amount is often insufficient, and the introduction of a punitive environmental tort compensation system is needed to enhance the deterrence of environmental legal responsibilities and address deficiencies in compensating for damages (Kelley, 2011; Yang, 2018; Zhang, 2005).

Due to the rough provisions of Article 1232 of the *Civil Code* and the divergent understanding of the punitive damages system by Chinese judicial authorities and academics, the punitive damages for environmental torts triggered great controversy on the specific legal application of the system upon its introduction. Even though the Supreme People's Court of China issued the *Interpretation of the Supreme People's Court on the Application of Punitive Damages in the Trial of Ecological and Environmental Tort Dispute Cases* (hereinafter referred to as the *Judicial Interpretation*) on January 12, 2022, it still failed to comprehensively resolve and quell these disputes (Fan et al., 2022). China's punitive damages for environmental torts is the most recent measure at the level of environmental governance in China, an important product of the exchange between China's environmental protection system and that of common law countries. It is of great theoretical and practical significance in shaping China's environmental awareness and achieving the goals of carbon peaking and carbon neutrality in China (Zhai, 2022). In fact, it is

highly necessary to reference the relevant experiences in the United States to solve the current issues surrounding China's punitive damages system for the environment. While the modern punitive damages system originated from English law in the 18th century (*Wilkes v. Wood*, 98 Eng. Rep.489), its applicability and conditions in the United Kingdom were subject to strict limitations (Owen, 1994; White, 2004). However, upon its introduction to the United States, the punitive damages system underwent significant development. It seems that the United States is the only country where the punitive damages system is extensively applied, and it has seen the most in-depth theoretical research and the most intense debates surrounding this system.

In the United States, the punitive damages system has found broad application in environmental tort cases, and disputes regarding its application conditions, determination of compensation amounts and other issues have been thoroughly discussed in legal precedents (Sebok, 2009). For instance, discussions in *Rex Trailer Co. v. United States* and *BMW of North America v. Gore* have revolved around whether the punitive damages system violates the constitutional principles of the "Double Jeopardy Clause" and "Due Process Clause" of the United States Constitution. Furthermore, cases like *Green Oil Co. v. Hornsby* and *BMW of North America v. Gore* have provided clarity on the factors considered in determining the amounts of punitive damages among other aspects.

It is necessary to clarify that the punitive damages system referred to in this article contains a legal system in which the amount of compensation awarded by the court exceeds the actual amount of damages. The punitive damages for environmental torts referred to in this paper refer specifically to the environmental compensation system constructed by Article 1232 of the *Civil Code* and its Judicial Interpretation, i.e., a punitive damages system in addition to environmental administrative penalties, ordinary civil environmental tort compensation and environmental criminal penalties. Limited by the topic of this paper, research software, such as SPSS, cannot be used for analysis. Instead, the paper systematically sorts out the legislative development and judicial practice of environmental punitive damages in China through comparative studies, legal analysis, and case studies and points out the shortcomings of China's environmental punitive damages system and its initiatives for improvement in the future. The first part of this paper will elaborate on the legislative evolution of punitive damages in China, as well as the legislative background, legislative controversies, and other relevant circumstances of environmental punitive damages in China. The second part of this paper will present a comprehensive picture of China's environmental punitive damages system in practice and point out its shortcomings. In the third part, the authors will examine the environmental punitive damages systems in the United States, Canada and New Zealand and indicate the direction for improvement in China's environmental punitive damages system by means of comparative studies. Finally, the fourth part of the paper will suggest ways to improve environmental punitive damages in China.

Methodology

The purpose of this paper is to systematically review the development of punitive damages for environmental torts in China, summarize the actual state of the system in legislative and judicial practice, identify the issues it faces and provide specific recommendations. In order to achieve these research objectives, the legal-dogmatic method is the main research method used in this article. The legal-dogmatic method in legal research is a significant approach characterized by its reliance on legal texts, legal rules and legal cases for study, which assists scholars and law

practitioners in interpreting and applying the law. And the legal-dogmatic method also contributes to the study of the internal structure and components of legal systems. (Smits, 2017; Dolzhikov, 2021).

In addition to the legal-dogmatic research method, the case study method is another significant research approach in this paper. The case study method, by extensively analyzing real legal cases, assists legal scholars, readers, judges in comprehending how legal rules are applied in practical situations. If the case study method is not employed, this paper would be limited to abstract discussions and would be unable to accurately delineate the true and complete situation of punitive environmental compensation in China.

Comparative research method is also an important research approach in this paper. Comparative research method is crucial in legal studies as it provides an opportunity to gain a deep understanding of the similarities and differences among various legal systems, legal frameworks, and legal practices (Samuel, 2017). Punitive damages for environmental torts is not an indigenous system in China, it is the result of learning from common law system. Under this context, the research in this paper must engage in comparative research to demonstrate the distinctive features of punitive damages for environmental torts in China and the issues it faces.

It is particularly noteworthy and necessary to clarify that both China and the United States target serious environmental pollution behaviors in their punitive damages for environmental torts, and the objectives of these systems in both countries are largely aligned. They aim to impose significant financial penalties on defendants in certain landmark cases to achieve the goals of punishing the offenders, deterring potential infringers, raising public environmental awareness and compensating for environmental damages. However, the legal systems of China and the United States are fundamentally different. The punitive damages for environmental torts in U.S. is based on its well-established common law system, with a long history of development and a wealth of case law, granting judges greater discretion in making decisions on environmental punitive damages. In contrast, as a civil law country, China's punitive damages for environmental torts relies more on statutory provisions and judicial interpretations issued by the Supreme People's Court, with judges having relatively less discretion. Moreover, the legal cultures of the two countries differ significantly, with the litigation culture in the United States potentially leading to an overabundance of environmental punitive damages lawsuits, a situation that China should strive to avoid in its judicial practice. Therefore, punitive damages for environmental torts in the United States is not flawless and there are also criticisms from the media and academic community within the country. China should learn from the advantages that can be transplanted in the US punitive damages for environmental torts system.

Overall, this paper conducts a comparative study of punitive damages for environmental torts in China and the United States using various methods, with the aim of offering suggestions for the improvement of China's system. It is hoped that China's punitive damages for environmental torts can embark on a path of standardized and rational development from its inception, making a positive contribution to China's environmental protection efforts.

The legislative evolution of China's punitive damages system

Due to the rejection of punitive damages systems in civil law countries, China's punitive damages system did not emerge until the late 20th century (Li and Zhou, 2012). Currently, China has a punitive damages system in only three areas: consumer rights

protection, intellectual property protection and environmental protection (Wu, 2019). China's environmental punitive damages system is the latest move in China's family of punitive damages systems and has undergone a tortuous legislative journey.

Generally, the punitive damages system conflicts with China's legal system itself to a certain extent. This is because civil law systems in continental legal traditions generally adhere to the principle of complete compensation, with the objective of compensating for damages. Integrating punitive damages, which have a retributive and deterrent function, into the civil law system would inevitably face significant resistance, a challenge found in any continental legal system (Gotanda, 2006). For instance, in a 2007 ruling concerning the enforcement of punitive damages judgments from the United States, Judge Marco Cappelletti of the Italian Supreme Court explicitly stated, "Italian tort law aims to serve a compensatory function, with no room for enforcement (Cappelletti, 2015)." Although the French Supreme Court acknowledged the potential legality of punitive damages in the Fountaine Pajot case in 2010, punitive damages in France still encounter substantial debate (Cour de Cassation [Cass.], 2010; Parker, 2012; Sibon, 2013).³

Similarly, China, as a country with a civil law system, did not recognize punitive damages within its legal and judicial institutions before the 1990s. However, as a country with a prominent pragmatic philosophy, China first provided for punitive damages in 1993 in the form of a special law in the *Consumer Rights Protection Law*. Article 49 of the law provides for the doubling of punitive damages in that if the operator provides goods or services fraudulently, he or she shall, at the request of the consumer, increase the compensation for the loss suffered by him or her by doubling the price of the goods purchased or the cost of the services received by the consumer (Yan and Weilin, 2014). This marks a significant breakthrough in the Chinese civil law system and heralds the introduction of the punitive damages system in China.

Subsequently, China re-emphasized punitive damages provisions in the consumer field in Article 113 of the *Contract Law* enacted in 1999. By 2003, China's real estate market had begun to flourish. To regulate the sale and purchase of real estate, China's Supreme People's Court issued a judicial interpretation, *Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law to the Trial of Disputes on Contracts for the Sale and Purchase of Commercial Properties* (Fa Shi 2003 [7]), in which Articles 8 and 9 provide for a punitive damages system in the field of real estate sales and purchases. The year 2009 was a year of rapid development of China's punitive damages system. Article 96 of the *Food Safety Law of the People's Republic of China*, adopted on February 28, 2009, provides a tenfold compensation system. Then, Article 47 of the *Tort Liability Law of the People's Republic of China*, adopted on December 26, 2009, provides for punitive damages in product liability. The year 2013 saw another substantial development in China's punitive damages system, with both the *Trademark Law* and the *Tourism Law* providing the latest provisions in the punitive damages system. It can be said that before the promulgation of China's *Civil Code*, China's punitive damages system had gradually become a system, forming a family of punitive compensation provisions in the relevant economic and social laws, as shown in the following Table 1.

The punitive damages system is primarily a legal framework adopted by common law countries. Civil law countries have shown relatively low receptivity to the punitive damages system, and they have not been particularly proactive in enforcing punitive damages judgments from common law countries (Braslow, 1999). China's punitive legislation on consumer rights protection and intellectual property rights is a breakthrough in the legislation of punitive systems in the legal systems of civil law

countries and has played an important role in exploring and laying the foundation for the establishment of an environmental punitive damages system in China (Wang, 1997).

Theoretical discussion of punitive damages for environmental torts in China

In Chinese academia, the most influential scholar in the field of punitive damages research is Professor Wang Liming. His academic papers published in 2000 and a series of important papers published afterward have made important contributions to the construction and improvement of the punitive damages system in China (Wang, 2000, 2003, 2019). Punitive damages for environmental torts are a kind of legal transplantation of punitive damages in other fields. Therefore, research on punitive damages in Chinese academia has brought rich conceptual resources and development ideas for the birth of the environmental punitive damages system. Specifically, in 2003, some Chinese scholars explored the introduction of an environmental punitive damages system (Gao, 2003). As of April 13, 2023, there were 3048 academic papers and 1577 dissertations related to punitive damages in China's largest academic repository, CNKI. Among these academic papers, 505 are academic papers and 437 are dissertations related to punitive damages in the environment. In fact, Chinese academics have studied punitive damages comprehensively and systematically over the years, and since China is also a civil law country, it is likely that the system would not have come into existence in China without the strong research and support of academics for punitive damages. Although there have been ongoing debates regarding the scope of applicability and criteria for determining punitive damages in environmental torts, during the deliberation and formulation of China's *Civil Code*, the Chinese academic community has largely reached a fundamental consensus on the introduction of a punitive damages regime for environmental torts. This invaluable consensus-making process has played an irreplaceable role in the eventual inclusion of punitive damages for environmental torts in China's *Civil Code*.

Legislative confirmation of environmental punitive damages in China

With strong promotion from Chinese academia and judicial circles, Article 1008 of the *Civil Code* (Exposure Draft), published by the Chinese National People's Congress in September 2018, provides for punitive damages to be brought by the infringed person if the infringer intentionally damages the ecological environment, and various suggestions have been received to improve this provision. The *Civil Code* (Draft), which was published afterward, changed the consequence of damage to "serious consequences caused by pollution of the environment and ecological damage", which was eventually adopted in Article 1232 of the *Civil Code*. It was also adopted on January 1, 2021, which means that punitive damages for environmental torts were formally confirmed by legislation (Liang and Zhu, 2020). At present, China's environmental punitive damages system is specifically stated in the *Civil Code*: if an infringer intentionally pollutes the environment or damages the ecology in violation of the law, the infringed shall have the right to claim the corresponding punitive damages. Since the content of this provision is summarized and prone to various misunderstandings, leading to confusion in judicial practice, the Supreme People's Court of China issued the *Interpretation on the Application of Punitive Damages in the Trial of Ecological and Environmental Tort Dispute Cases* in January 2022, introducing refined rules for China's punitive damages for environmental torts. Its key provisions outline the qualifications of plaintiffs and defendants, the burden of proof, and the judicial determination method of pollution losses. The *Judicial Interpretation* provides that the amount of compensation for personal injury and property

Table 1 List of punitive damages systems in China before the promulgation of the Civil Code.

Year	Legal Category	Name of Regulation	Provision No.	Main Content
1993	Legislation	Consumer Protection Law	Provision 49	If the operator provides goods or services fraudulently, the amount of compensation shall be double the price of the goods purchased or the cost of the services received by the consumer, in accordance with the consumer's request for additional compensation.
1999	Legislation	Contract Law	Provision 113	If the operator provides goods or services to consumers with fraudulent behavior, he or she shall be liable for damages in accordance with the provisions of the <i>Law of the People's Republic of China on the Protection of Consumer Rights and Interests</i> .
2003	Judicial Interpretation	Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Disputes over Commercial Housing Sales Contracts	Provision 8, 9	After the contract of sale of commercial properties is concluded, and the seller mortgages or sells the house, the buyer shall request the seller to bear the compensation liability not exceeding the double of the purchase price paid for the house. If the seller intentionally conceals the fact that the house has been mortgaged or other important information when concluding the contract of sale, the buyer shall request the seller to bear the compensation liability not exceeding the double of the purchase price paid for the house.
2009	Legislation	Food Safety Law	Provision 96	In the case of the production or the sale of food that clearly does not meet food safety standards, the consumer shall ask for compensation for damages, in addition to compensation of ten times the price from the producer or seller.
2009	Legislation	Tort Law	Provision 47	If the products are still produced or sold despite being defective and cause death or serious health damage to others, the infringed shall have the right to claim the corresponding punitive damages.
2013	Legislation	Tourism Law	Provision 70	If the travel agency has the conditions for performance and still refuses to perform the contract at the request of the traveler and causes serious consequences, such as personal injury or detention of the traveler, the traveler shall also request the travel agency to pay compensation of more than double or less than three times the cost of the tour.
2013	Legislation	Trade Mark Law	Provision 63	For malicious infringement of the exclusive right to use a trademark, if the circumstances are serious, the amount of compensation shall be determined in accordance with the abovementioned method of determining the amount of more than double or less than three times. The amount of compensation shall include the reasonable expenses paid by the right holder to stop the infringement.

damage is generally not more than twice the amount. Moreover, the *Judicial Interpretation* stipulates that if the infringer who has been given a fine by the administrative organ or sentenced to a fine by the people's court for the same polluting environment or damaging ecology claims to be exempted from punitive damages, the people's court shall not support it, but the amount of punitive damages can be considered comprehensively when it is determined.⁴ This shows that China is determined to punish polluters in the current era of further development of ecological civilization.

The application of the current status and controversy of punitive damages for environmental torts in China

Since the implementation of China's Civil Code, there has been a rapid emergence of case decisions applying punitive damages for environmental torts in judicial practice. However, in these case decisions, there was no uniformity in the interpretation and

application of Article 1232 of the Civil Code by different courts. As a special kind of civil liability, the legislation should have provided more detailed provisions for punitive damages for environmental torts. However, for the time being, the relevant law shows a policy declaration posture. There is a lack of necessary rules to guide judges to make proper judicial application.

The authors counted the first eight typical cases of applying punitive damages for environmental torts that emerged from the implementation of the Civil Code on January 1, 2021, until the end of 2022. Among them, seven cases are the first cases in which the judicial authorities in each province decided to apply punitive damages for environmental torts (see Table 2).

First, in accordance with the Civil Code of China, the current environmental civil liability lawsuits in China primarily fall into three categories: environmental private interest litigation, environmental public interest litigation, and ecological environmental damage compensation litigation. However, all eight of the initial

Table 2 Typical cases of punitive damages for environmental torts after the Civil Code.

Time	Name of the case	Facts of the case	Punitive damages	Base number	Multiplier	Other legal liabilities
January 2021	Civil Public Interest Litigation on Environmental Pollution in Fuliang County, Jiangxi Province (The Supreme People's Procuratorate, 2022) (The first case in China)	The defendant Hailan company illegally disposed of sodium sulfate waste liquid, which affected the environment of approximately 6.6 square kilometers of watershed and caused drinking water difficulties for more than 1000 people.	17.1 million RMB	Environmental functional damage fee 57,000 RMB	3	The company compensated 2.168 million RMB for environmental restoration costs, 57,000 RMB for functional environmental damages, 533,000 RMB for emergency disposal costs, and 96,000 RMB for testing and appraisal costs and apologized to the public on national news media.
March 2021	Civil Public Interest Litigation on Illegal Acquisition and Sale of Precious and Endangered Wildlife in Qingdao City (Civil Judgment of Qingdao Intermediate People's Court and Shandong Province, 2021) (The first case in Shandong)	The defendants illegally acquired and sold precious and endangered wild animals, which caused a decrease in the number of precious and endangered wild animals.	99,000 RMB.	Wildlife damage fee 83,000 RMB Loss of ecological environment service function fee 907,000 RMB	0.1	Mr. Wu was sentenced to three years' imprisonment, three years' probation, and a fine of 60,000 RMB. Compensation of 83,000 RMB was required for the loss of wildlife and 907,000 RMB for the loss of ecological environment service function caused by the ecological damage; 60 days of ecological environment public welfare labor was undertaken.
April 2021	Criminal Incidental Civil Public Interest Litigation for Illegal Denudation in Xunyi County (Criminal Incidental Civil Judgment of Xunyi County People's Court and Shaanxi Province, 2021) (The first case in Shaanxi)	The defendant, Mr. Xiao, harvested many forest trees (731) in excess of the number specified in the license of forest harvesting in order to make illegal profits.	The cost of tree replanting in accordance with the forestry department's operational design.	The cost of tree replanting in accordance with the forestry department's operational design.	1	Defendant Xiao was sentenced to one year's imprisonment and a fine of 15,000 RMB for the crime of illegal denudation. The defendant Mr. Xiao provided 30 days of ecological and environmental management public welfare labor and replanting to ensure the survival of the trees.
August 2021	Criminal Incidental Civil Public Interest Litigation on Environmental Pollution in Qingtian County (Procuratorial Daily, 2021a) (The first case in Zhejiang) (China News Service, 2023)	Mr. Ma and 11 others illegally dumped 325 tons of hazardous waste of electroplating sludge across the city.	31.56 million RMB	Compensation for ecological and environmental damage 1.052 million RMB	0.3	The principal offenders Ma, Chen, Lin and Wang were sentenced to prison terms ranging from three years to four years and fined from 100,000 RMB to 60,000 RMB each. Compensation for ecological and environmental damages and other expenses amounted to be 1.272 million RMB.
September 2021	Criminal Incidental Civil Public Interest Litigation on Environmental Pollution in Datong District, Huainan City (Huainan Procuratorial Network, 2021) (The first case in Anhui)	The illegal disposal of approximately 20 tons of hazardous waste.	More than 90,000 RMB	Cost of ecological restoration More than 30,000 RMB	3	A company in Zhejiang was sentenced to a fine of 100,000 RMB. Yu and other three people were sentenced to prison terms ranging from four years to four years and six months, each with a fine ranging from 15,000 RMB to 20,000 RMB. Emergency disposal, contaminated waste treatment and ecological restoration costs amounted to more than 2.4 million RMB.
October 2021	Civil Public Interest Litigation for Damage to the Great Wall History, Environmental Landscape and Ecological Environment in Yi County (Procuratorial Daily, 2021b) (The first case in Hebei)	The defendant illegally occupied the forestland, the protection scope of the Great Wall cultural relics and the construction control zone, carried out mining of raw materials, crushing and screening operations, caused a large area of forestland around the relics to be exposed and vacated, and caused damage to the ancient Great Wall relics as well as the surrounding ecological environment.	528,000 RMB	Cost of loss of ecological and environmental functions 528,000 RMB	1	The defendant must stop the infringement and restore the ecological environment or compensate the cost of ecological environment restoration of 718,000 RMB. The defendant compensated the cost of the loss of ecological environment function of forestland in the amount of 528,000 RMB and apologized to the public in the national media.
October 2021	Criminal Incidental Civil Public Interest Litigation for Illegal Mining in Dongzhi County, Anhui Province (Supreme People's Procuratorate, 2022)	A new material science and technology limited liability company has long mined on a large scale in the Dali Mountain Provincial Scenic Spot, which caused a large area of ecological damage.	1.1391 million RMB	Over mining ore property damage 27,981 million RMB	0.05	A company and Shao committed the crime of illegal mining and faced criminal liability, a fine and the recovery of A company's illegal income of 27.981 million RMB.
April 2022	Criminal Incidental Civil Public Interest Litigation for Illegal Occupation of Agricultural Land in Chalin County (Procuratorial Daily, 2022) (The first case in Hunan)	Mr. Duan privately built a road, destroying 6.7 mu of local national secondary noncommercial forest woodland. This led to rocky exposed mountains, serious soil erosion and damaged ecological functions.	17,000 RMB	Loss of ecological service function More than 0.8 million RMB	2	Duan committed the crime of illegally occupying agricultural land and was sentenced to six months' imprisonment, suspension for one year, and a fine of 10,000 RMB. The compensation for the loss of the main service function between the damage to the ecological environment and the completion of the restoration was more than 0.8 million RMB.

cases applying punitive damages for environmental torts are categorized as environmental civil public interest litigation. Furthermore, as of March 28, 2023, no judgments explicitly applying punitive damages in environmental private interest litigation have

been retrieved from the China Judgments Online database. This development contradicts the mainstream theory in the Chinese legal community, which suggests that punitive damages should primarily apply to private interest litigation, and it differs from

the practice in common law systems, where punitive damages are mainly applicable in private tort cases. The extensive application of punitive damages in environmental public interest litigation by Chinese judicial practice undoubtedly represents an expansion of the scope of punitive damages' application and marks another breakthrough in China's adoption of the civil law system within the continental legal tradition.

Furthermore, the application of punitive damages for environmental torts has even breached the boundaries of environmental civil litigation, permeating the field of environmental law. There have been instances in which environmental authorities, empowered by the government, negotiated punitive damages with environmental wrongdoers in cases involving compensation for environmental damage. For example, on August 19, 2022, the Environment Bureau of Zhongshan City reached a compensation agreement with a copper company. The agreement stipulated that the company would pay 1.17 million RMB as compensation for ecological environmental damage resulting from its illegal discharge of water pollutants through underground pipes, in addition to a 2-fold punitive damages penalty amounting to 2.34 million RMB.⁵ Given this context, it is essential to consider how this expansion of the scope of punitive damages for environmental torts should be approached from a legal theory perspective. Additionally, judicial practice should address the issue of the applicability of the punitive damages system in environmental tort cases.

Second, there are significant differences in the methods of calculating the amount of punitive damages in individual cases. The calculation of punitive damages should consist of two components: the base amount and the multiplier. Regarding the base amount, Article 9 of the Judicial Interpretation clearly stipulates that when the People's Court determines the amount of punitive damages, it should use the compensation for personal injury and property loss resulting from environmental pollution and ecological damage as the base for calculation. This article provides a relatively clear basis for private interest torts, but it generates significant controversy when applied to public interest torts. This is because Article 1235 of China's Civil Code specifies five types of losses and expenses that should be compensated for ecological environmental damage. The question arises as to whether all of these losses and expenses should be considered "property loss" and used as the basis for calculating punitive damages.

From the cases mentioned above, it is evident that there is a great deal of inconsistency in judicial practice. Some cases use environmental functional loss expenses and ecological restoration costs as the base, while others use the sum of the five specified losses and expenses, i.e., compensation for ecological environmental damage, as the base. Some scholars argue that the calculation base should be limited to "losses resulting from the loss of ecological environmental services from the time of damage to the completion of restoration" and "losses resulting from permanent damage to ecological environmental functions," excluding the other expenses specified in Article 1235 of the Civil Code (Su, 2021).

In addition, there is significant variation in the multiplier used in calculating punitive damages in these cases. Regarding the multiplier, Article 10 of the Judicial Interpretation states that in determining the amount of punitive damages, the People's Court generally should not exceed double the amount of compensation for personal injury and property loss. This provision is a response to the confusion that arose in judicial practice after the implementation of the Civil Code. However, this does not fully resolve the issue because the determination of the multiplier itself is a matter of judicial discretion. The key lies in defining the factors to be considered when determining the amount. In this regard, Article 10 lists several factors to be considered, such as "the

degree of malicious intent of the tortfeasor, the severity of the consequences of the tort, the benefits obtained by the tortfeasor from the environmental pollution or ecological damage, or the measures taken by the tortfeasor for remediation and their effectiveness." Nevertheless, some scholars argue that the specific circumstances of the defendant facing criminal penalties or administrative sanctions should also be considered as factors in determining the multiplier for punitive damages. Others make it clear that they do not agree with the notion that merely accepting criminal punishment should exempt one from or result in a lower determination of punitive damages. They argue that the nature and function of these two forms of punishment are different, and they cannot be substituted for each other (Yang, 2013).

Third, the subjective state of a tortfeasor held liable for punitive damages in judicial decisions encompasses not only direct intent but also indirect intent and gross negligence and can even be said to extend beyond the subjective element stipulated in Article 1232 of the Civil Code, namely, "the tortfeasor intentionally polluting the environment or damaging the ecology." For instance, in the Fu Liang case in Jiangxi, the tortfeasor was held liable for punitive damages based solely on indirect intent according to the court's ruling. In this case, the production manager of the implicated company knowingly entrusted the handling of dangerous materials to a party without proper qualifications, thereby allowing the occurrence of environmental pollution and its harmful consequences. Knowing and permitting the occurrence of harm constitutes indirect intent. In the case of Huainan, Anhui, the subjective state of the tortfeasor amounted to negligence, yet it was still held liable for punitive damages by the court. In this case, the actual controller of the implicated company, when delegating the disposal of the company's hazardous waste to another party, failed to verify its qualifications and did not fulfill the duty to inspect, indirectly leading to the occurrence of environmental pollution. The tortfeasor should have exercised due diligence but failed to do so, constituting negligence. This once again illustrates the expanding application of the punitive damages system in environmental torts within the context of Chinese judicial practice.

Fourth, there is no uniformity in the requirements and determination of the severity of the consequences caused by environmental torts in the judgments of various cases. For example, in the judgment of the Xunyi case in Shaanxi Province, there was no specific determination of the severity of the consequences of environmental torts. In the verdict, it was only stated that "the defendant, Mr. Xiao, has damaged the ecological and environmental resources by indiscriminately cutting down forest trees, which has damaged the national interests and social public interests" (Kelley, 2011), and then the defendant was sentenced to bear punitive damages for environmental torts. In the verdict of the Jiangxi Fuliang case, the court clearly stated that the defendant's environmental tort "caused pollution of the environment around the 8.08 mu area around the octagonal well in Shouan Town, Fuliang County, and the surface water and groundwater in the Dongkou Group and Jiang Village Group in Dongkou Village, Xianghu Town, Fuliang County. This has affected the environment of about 6.6 square kilometers of watershed in Dongkou Village, Xianghu Town, Fuliang County. It has also hindered the drinking water safety of more than 1,000 local residents" and "caused serious consequences of pollution of local water bodies, soil and other environments" (Xu and Khan, 2023), on the basis of which the defendant was sentenced to bear punitive damages for environmental torts.

As a nascent element within China's legal framework, the significance of punitive damages for environmental torts is indeed commendable. At present, although there are principled provisions in China's Civil Code, and some implementation details

have been specified in judicial interpretations, there remains a certain level of ambiguity in aspects such as the scope of cases and the methods for calculating compensation. This ambiguity has led to challenges in uniformly applying the system in practice and has also resulted in a tendency for the system to be overly expansively applied. Therefore, it is essential for China to refine its approach to punitive damages for environmental torts by learning from the mature experiences of foreign countries in this field. China's legislators need to carefully consider how to set reasonable compensation standards and caps to avoid potentially excessive penalties that could impose unreasonable financial burdens on businesses. Otherwise, punitive damages for environmental torts in China could potentially bring more harm than benefit to China's environmental endeavors and economic development.

International experience of punitive damages for environmental torts

The United States is generally considered one of the countries with the highest number of punitive damages cases in the world. This is attributed to the permissibility of its legal system to implement strict compensation regimes, especially in the domains of intellectual property, product liability, medical malpractice, and environmental torts (Beermann, 2007). However, as punitive damages systems have evolved in the United States, issues such as escalating compensation amounts and excessive litigation have emerged (Sales and Cole, 1984). Consequently, the United States has undertaken more strict and comprehensive regulations governing the establishment of punitive damages and the calculation of compensation amounts (Gotanda, 2003). This development serves as a noteworthy model for study and potential adoption in other countries, including China, seeking to address similar challenges.

The punitive damages system gained widespread acceptance in the mid-20th century within American courts. In the Restatement (Second) of Torts in the United States, punitive damages are defined as follows: "Punitive damages are damages, other than compensatory or nominal damages, awarded against a person to punish them for their outrageous conduct and to deter them and others from similar conduct in the future."⁶ Typically, punitive damages may be awarded for conduct that is deemed outrageous due to the defendant's malevolent intent or reckless indifference toward the rights of others.

However, the requirements for establishing and assessing punitive damages vary among different states in the United States, both in statutory law and case law. The Model Punitive Damages Act, drafted by the Uniform Law Commissioners, provides a representative summary of the elements required to establish punitive damages in Article V. It states, "The trier of fact may award punitive damages against a defendant if (1) the defendant has been found liable for a legally recognized injury that supports an award of punitive damages under the law of this State; (2) the plaintiff has established by clear and convincing evidence that the defendant maliciously intended to cause the injury or consciously and flagrantly disregarded the rights or interests of others in causing the injury; and (3) an award is necessary to punish the defendant for the conduct or to deter the defendant from similar conduct in like circumstances."⁷

Nevertheless, punitive damages in the United States have faced ongoing disputes regarding their scope and the determination of the amount awarded. Some scholars have expressed concerns about the increasing frequency and amount of punitive damages awarded by the courts (Eisenberg et al., 1997). In the mid-1980s, there was a wave of reform efforts in the United States aimed at the punitive damages system. Reformers advocated for (1) limiting the scope of punitive damages to intentional torts and

quasicriminal acts, establishing an actual malice standard, and (2) establishing standards for punitive damages that align with wrongful conduct and urging federal legislation to address the issue of multiple punitive damages to prevent excessive and unfair outcomes (Marrero, 2016; Owen, 1994; Parlett, 1995).

In the specific context of punitive damages for environmental torts, the punitive damages system in the United States applies to various types of tort cases, and there is no significant difference in theory or judicial application between punitive damages in environmental tort cases and other tort cases. However, due to the difficulties in calculating the magnitude of environmental harm and the substantial amounts of environmental administrative fines, determining the amount of punitive damages in environmental tort cases has sparked additional controversy (Brown, 2000).

The strict subjective elements of punitive damages

In the United States, punitive damages are subject to specific requirements, with a particular focus on the defendant's subjective culpability when engaging in wrongful conduct—culpability in terms of the blameworthiness or reprehensibility of their actions. According to Model Punitive Damages Act §5(a)(2), the plaintiff must establish, through clear and convincing evidence, that the defendant intentionally caused harm with malice or recklessly disregarded the rights of others, resulting in harm.⁸ This criterion aims to establish a standard for the culpability of punitive damages liability. As articulated by the United States Supreme Court in the case of *State Farm Mutual Automobile Insurance Co. v. Campbell*, punitive damages should be adjudicated only under the following circumstances: when the defendant's culpability, even after compensatory damages have been paid, is so deserving of condemnation that further sanctions are necessary for the purposes of punishment or deterrence.⁹ In other words, punitive damages are not applicable to all intentional tort cases or intentional environmental tort cases; they are specifically reserved for cases that exhibit a high degree of blameworthiness.

Determining the amount of punitive damages

Generally, U.S. judges oppose standardized punitive damages formulas, largely resisting fixed ratios between compensatory and punitive damages.¹⁰ This mindset among judges is understandable, as the circumstances of different punitive damages cases can vary significantly. Therefore, avoiding a one-size-fits-all calculation for punitive damages is reasonable. However, the highly complex reality is that in punitive damages cases in the United States, the amounts awarded as punitive damages have not remained within a stable range but have shown an increasing trend, as critics argue that overcompensation undermines the rights-based justification for punitive damages and blurs the line between tort law and criminal law (Kozioł, 2008).

Moreover, it has become increasingly challenging to accurately estimate the amount of punitive damages in specific cases. In response to these concerns, the Supreme Court has even initiated constitutional scrutiny under the Fourteenth Amendment's Due Process Clause to address whether excessively high punitive damages amounts are unconstitutional. In the landmark case of *BMW of North America, Inc. v. Gore*, the Court established "three guideposts" for evaluating the constitutionality of punitive damages amounts: (1) the degree of reprehensibility of the defendant's misconduct, (2) the disparity between the actual or potential harm suffered by the plaintiff and the punitive damages award, and (3) the difference between the punitive damages awarded by the jury and the civil penalties authorized or imposed in comparable cases.¹¹ Furthermore, the American Restatement (Second) of Torts, Section 908, provides a more general guideline

regarding factors to consider when determining the amount of punitive damages. These factors include the character of the defendant's act, the nature and extent of the harm caused or intended to be caused to the plaintiff by the defendant, and the defendant's financial resources, among others.¹²

In the case of *Green Oil Co. v. Hornsby*, the Supreme Court of Alabama outlined seven factors for assessing the amount of punitive damages: (1) a reasonable relationship between punitive damages and the actual harm or potential harm caused by the defendant's conduct; (2) the reprehensibility of the defendant's conduct, including the duration of the behavior, the defendant's awareness, concealment, any prior similar conduct, and the frequency of such conduct; (3) the defendant's profit from the wrongful conduct, with the aim of depriving the defendant of any unjust enrichment; (4) the financial capacity of the defendant; (5) including the plaintiff's litigation expenses to encourage the pursuit of legal action against wrongful conduct; (6) considering any criminal penalties imposed on the defendant; and (7) accounting for any civil actions against the defendant for the same wrongful conduct to moderate the amount of punitive damages.

In the specific context of punitive damages of environmental torts, the U.S. Supreme Court established a 1:1 ratio between punitive and compensatory damages in the case of *Exxon Shipping Co. v. Baker*, which stemmed from the Exxon Valdez oil spill incident in 1983. The Court held that federal statutory law does not prohibit punitive awards on top of damages for economic loss but specified that the punitive award "should be limited to an amount equal to compensatory damages."¹³ However, the Supreme Court's 1:1 ratio for maritime punitive damages has faced criticism for its perceived restrictiveness, with warnings that the same rationale may not apply beyond the realm of maritime law (Kerr, 2009). U.S. courts have increasingly departed from the 1:1 ratio in environmental tort cases and have often applied higher ratios of punitive to compensatory damages. For instance, in the case of *Johansen v. Combustion Engineering, Inc.*, the U.S. Eleventh Circuit Court of Appeals allowed a 100:1 ratio between punitive and compensatory damages. The court reasoned that substantial punitive damages were necessary for deterrence purposes and, given the relatively small actual harm, it was justified to have a disproportionate punitive damages award compared to compensatory damages.¹⁴

Unsurprisingly, this verdict has encountered certain criticisms, with opponents arguing that the court's reliance on a broad deterrence principle to justify a 100:1 ratio of punitive to compensatory damages is problematic. They contend that this approach fundamentally contradicts the principles established in the case of *BMW of North America, Inc. v. Gore*, which outlined the "three guideposts." Additionally, the practice of assessing the excessive nature of punitive damages in reference to the upper limits of environmental administrative fines is deemed unreasonable. This is because environmental legislation, such as the Clean Air Act and the Clean Water Act, stipulates high administrative fine ceilings, but these ceilings do not necessarily reflect the actual severity of harm to the national interest (Brown, 2000).

To sum up, the United States, recognized as one of the countries with the most extensive application of punitive damages systems in the world, widely applies punitive damages across various types of tort litigation, including citizen suits. The application of punitive damages in the U.S. places significant emphasis on assessing the tortfeasor's subjective degree of fault. Moreover, the determination of punitive damages amounts is not rigidly bound to fixed ratios between punitive and compensatory damages, but rather, it highlights the importance of a comprehensive consideration of relevant factors. This approach has crucial implications for China as it continues to refine its environmental tort punitive damages system within the scope of judicial practice.

Suggestions for the improvement of punitive damages for environmental torts in China

While punitive damages for environmental torts in China may have certain issues in both legislative and judicial practice, it is essential to acknowledge that the system has been legislatively recognized for only two years, and its positive aspects should be recognized first and foremost. From a comparative research perspective, considering the relevant experiences from the United States, several key issues should be given particular attention in the future development of China's punitive damages for environmental torts.

First, the application of punitive damages for environmental torts should be strictly restricted. Even before the implementation of China's Civil Code, some scholars argued that punitive damages should not be applied in public interest litigation for environmental torts. They believed that the existing system for compensating for ecological environmental damages and administrative fines provided sufficient punishment for illegal actions that harmed the public environmental interest, and it was unnecessary to apply punitive damages for redundant punishment (Chen, 2020; Li, 2020; Liu, 2020; Yang and Li, 2019).

Unlike the objective of citizen suits in the United States, which is to assist governmental enforcement of environmental regulations, China's environmental public interest litigation runs parallel to environmental administrative enforcement without contradiction. Moreover, the existing system for ecological environmental damage compensation and administrative penalty measures in China have already imposed penalties on illegal acts that harm the public interest, significantly exceeding compensation for environmental damages. Additionally, a substantial number of environmental public interest lawsuits in China are initiated by administrative agencies or procuratorates. Therefore, although punitive damages in U.S. citizen suits can incentivize private enforcement, this is not always the case in China's environmental public interest litigation. Consequently, the application of punitive damages in China's environmental public interest litigation should be more stringent than in cases of environmental private interest tort litigation, rather than applying punitive damages uniformly to all types of environmental tort litigation, including citizen suits, as is done in the United States. However, Article 12 of the Supreme People's Court's "Judicial Interpretation" in China stipulates that in cases where state-designated agencies or organizations, as representatives of the injured parties, request punitive damages against the tortfeasor, the people's court may handle it in accordance with the regulations. This clarifies that punitive damages can be applied in environmental public interest litigation. Nevertheless, from the perspective of the function of punitive damages for environmental torts, it should primarily be applied in private interest litigation, and its application in public interest litigation should be strictly limited.

On the one hand, to prevent excessive burdens on tortfeasors when punitive damages are applied in both public and private interest cases, there should be limitations on the amount of punitive damages in public interest litigation. In environmental public interest litigation, the calculation of compensation for ecological environmental damages already carries a certain punitive element. When determining the specific amount of punitive damages, the calculation of ecological environmental damages should be accounted for.

In China's environmental judicial practice, the calculation of ecological damage compensation is based on the "virtual governance cost method," with multiplication factors (coefficients) of 1.5 and 10 applied to determine the upper and lower limits of ecological environmental damage compensation. This method already incorporates a form of implicit punishment with the

higher coefficients serving as a de facto punitive element (Liu, 2022a, b; Peng, 2022). On the other hand, the sequence of enforcement of punitive damages in public interest litigation should be restricted, ensuring that it follows the enforcement of punitive damages in private interest litigation.

Second, concerning the determination of the amount of punitive damages, it should not mechanically adhere to the ratio defined in Article 10 of the “Judicial Interpretation,” which states that punitive damages “shall generally not exceed twice the amount of the personal injury compensation and property loss.” Instead, there should be further clarification of the factors to consider when determining punitive damages. In this regard, valuable insights can be drawn from the experience of the United States’ environmental tort punitive damages system, including the seven factors established in the *Green Oil Co. v. Hornsby* case and the “three guideposts” identified in the *BMW of N. Am. v. Gore* case. Furthermore, the judgment in typical environmental tort cases should provide a better understanding of the criteria and the amounts of punitive damages in environmental tort cases. This would increase transparency and oversight, alleviating concerns about the arbitrary and unpredictable application of punitive damages in environmental torts.

Third, it is essential to properly manage the relationship between environmental punitive damages and criminal liability to prevent excessive punishment. The second paragraph of Article 10 in the “Judicial Interpretation” explicitly states that “if an infringer argues for exemption from punitive damages due to having already received a fine from an administrative authority or having been sentenced to a fine by a people’s court for the same environmental pollution or ecological harm, the people’s court shall not support such an argument. However, the court may take this into account when determining the amount of punitive damages.” The highest judicial authorities in China may not have anticipated that in current judicial practice, most cases of environmental punitive damages are criminal incidental civil public interest litigation cases, meaning that the defendants are often already sentenced to fixed-term imprisonment and hefty fines. Although provided for in the *Civil Code*, China’s environmental punitive damages actually serve a deterrent function similar to criminal liability (Li and Zhang, 2022). Given that the burden of proof in civil cases is significantly lower than in criminal cases, punitive damages are procedurally easier to be awarded by judges. However, excessively high punitive damages are essentially equivalent to criminal sanctions, and awarding such damages based solely on the evidentiary standard of civil litigation could constitute a violation of the principle of due process. As was considered in *BMW of North America v. Gore*, punitive damages amounting to two million dollars, compared to compensatory damages of four thousand dollars, were deemed excessively high, thus violating the “substantive Due Process” under the “Due Process of Law Clause” of the Fourteenth Amendment of the Constitution, leading to the overturning of the punitive damages awarded in the original judgment. Although China does not have a constitutional review regarding the violation of the principle of due process, in the application of punitive damages for environmental torts, it should be made clear that the criminal liability already imposed on the defendant should be considered as a factor to reduce the amount of punitive damages to avoid excessive punishment.

Finally, it is necessary to further optimize the legislation related to punitive damages for environmental torts. At present, China’s environmental legislation is fragmented, with most environmental administrative laws appearing in the form of single laws, such as the *Environmental Protection Law*, the *Water Pollution Prevention and Control Law*, the *Air Pollution Prevention and Control Law*, and the *Wildlife Protection Law*. Environmental tort liability is provided for in the *Civil Code*, and environmental criminal liability is provided for in the *Criminal Law*. It has led to

various problems in the interface of China’s environmental legal liabilities, such as the interface between administrative penalties and civil damages, the interface between civil damages and criminal fines, and the problem of cross-sector and cross-regional coordination. China is currently formulating an environmental code. Taking this opportunity, China can refer to the codification model and liability setting model of the *French Environmental Code* and unify most of the environmental legal liabilities into the environmental code to solve the current confusion to clarify the boundaries of environmental civil, administrative and criminal liabilities (Zheng and Wang, 2022).

Conclusion

This paper has reviewed the development of China’s punitive damages for environmental torts in a more comprehensive way and analyzed the shortcomings of China’s punitive damages for environmental torts system in legislation and judicial practice through comparative research, text analysis, case summary, court decision and other research methods. The following conclusions can be drawn.

China has achieved rapid economic growth over the past 40 years. Coupled with the fact that China is one of the most populous countries in the world, the variety of social issues that China has to address is very complex. Although China has been a typical civil law country since ancient times, its punitive system has grown significantly in the past 30 years, which shows that China has adopted a pragmatic philosophy in the construction of its legal system and has not excluded the positive parts of the common law system.

China’s environmental crisis is not new. Although China has invested a lot in environmental governance in recent years and has achieved some results, it is still one of the countries facing the greatest environmental pressure in the world. Therefore, China must further enrich its means of governance, and environmental punitive damages are the latest weapon in China’s environmental governance, which reflects China’s determination to protect the environment.

The main elements of China’s punitive damages for environmental torts, especially in terms of plaintiff eligibility, defendant eligibility, subjective elements, and pollution results, are similar to but not as complete as those of countries with mature experience in environmental punitive systems, such as the United States. As a result, numerous problems have arisen in the judicial practice of the environmental punitive system in China. China should keep improving the punitive damages for environmental torts based on references to international experience, especially in terms of scope of application, competing liability and legislative optimization, which will make China’s environmental legal liability system more reasonable. We will also continue to pay attention to the future development of China’s punitive damages for environmental torts.

Received: 21 April 2023; Accepted: 2 April 2024;

Published online: 12 April 2024

Notes

- 1 According to the definition of the “environment industry” as jointly published by the United Nations, European Commission, International Monetary Fund, Organization for Economic Co-operation and Development, and the World Bank in the *SEEA-2003 (System of Environmental-Economic Accounting - 2003)*, it states that “The activities covered by the ‘environment industry’ are grouped together according to three main groups of activities: pollution management, cleaner technologies and products, and resource management.” See *Handbook of National Accounting-Integrated Environmental and Economic Accounting 2003* at <https://unstats.un.org/unsd/environment/seea2003.pdf>.

- In accordance with the regulations provided by the 15th meeting of the Environmental Protection Committee of the State Council of China, as documented in “Several Opinions on Actively Developing the Environmental Protection Industry” (Guo Ban Fa [1990] No. 64), the environmental protection industry is a collective term for activities related to technical development, product production, commercial distribution, resource utilization, information services, project contracting, and natural conservation and development, conducted with the purpose of preventing environmental pollution, improving the ecological environment, and protecting natural resources. Refer to the document at <https://www.waizi.org.cn/law/18415.html>.
- 2 Detailed information on China’s elimination of polluting enterprises can be found at <https://www.163.com/dy/article/EHGCP5VK05383RGH.html>.
 - 3 When asked in 2004 whether French law permitted punitive damages, Professor Georges Durry, a prominent French academic gave a simple response: “No, three times, no.” See Parker M (2012) Changing tides: the introduction of punitive damages into the French legal system. *Ga J Int Comp Law* 41:391. <https://theses.hal.science/tel-00717342/document>.
 - 4 The detailed content of this judicial interpretation can be found on this website: <http://www.sdcourt.gov.cn/qdzjfy/396640/396630/8179566/index.html>.
 - 5 The detailed content of this case can be found on this website: http://finance.sina.com.cn/jjxw/2022-08-27/doc-imizirav9902996.shtml?finpagefr=p_115.
 - 6 Restatement (Second) of Torts §908 (1977).
 - 7 Model Punitive Damages Act §5(a).
 - 8 Model Punitive Damages Act §5(a)(2).
 - 9 State Farm Mut. Ins. Co. v. Campbell, 538 U.S. 408 (2003).
 - 10 See, e.g., State Farm Mut. Auto. Ins. Co. v. Campbell, 538 U.S. 408, 424–25 (2003) (“We decline again to impose a bright-line ratio which a punitive damages award cannot exceed.”).
 - 11 BMW of N. Am. v. Gore, 517 U.S. 559, 574–85 (1996).
 - 12 Restatement (Second) of Torts §908 (1977).
 - 13 Exxon Shipping Co., 554 U.S. at 471.
 - 14 Johansen v. Combustion Eng’g, Inc., 170 F.3d 1320, 1339 (11th Cir. 1999).

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Acknowledgements

This work was supported by The National Social Science Fund of China (Grant No. 23FFXB003).

Author contributions

Ran An contributed to conceptualization, formal analysis, funding acquisition, writing—review and editing. Ying Zhou contributed to conceptualization, formal analysis, supervision, writing—review and editing. Rongzhao Zhang contributed to writing—original draft and editing.

Competing interests

The authors declare no competing interests.

Ethical approval

Ethical approval was not required as the study did not involve human participants.

Informed consent

Informed consent was not required as the study did not involve human participants.

Additional information

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